## A Companion of 55 Cancri

In the determination of he parallax of Boss 2378 one of the comparison stars showed a considerable proper motion; this star is located 1.′1 east and 0.′9 south of Boss 2380 = 55 *Cancri*; its position for 1900.0 is, accordingly,

$$\alpha = 8^h46^m44^s \qquad \delta = +28^\circ\,42'$$

The proper motion, derived from the plates, is

$$\mu_\alpha = -0.''480 \qquad \mu_\delta = -0.''250$$
$$\text{or } \mu = 0.''541 \qquad \text{in p} = 242.^\circ5$$

The agreement of this motion with that of 55 *Cancri* ($\mu = 0.''55$ in p = 243.°9) is so close that we may safely conclude that the two stars are moving together. The relative parallax of the companion as found from 16 exposures is $+0.''042 \pm 0.''018$; the absolute parallax is then $+0.''044$. For the parallax of 55 *Cancri* we have the following determinations:

| | | |
|---|---|---|
| $\Pi_{ab}$ = | $+0.''099$ | Jost |
| | $+0.''068$ | Yale |
| | $+0.''060$ | Adams |

The last is an unpublished value derived by Mr. Adams by means of spectroscopic methods.

Supposing the parallax of both stars to be the same, we find as the weighted mean value $\Pi = +0.''061 \pm 0.''010$; this gives 1360 astronomical units as the distance between the two stars.

The faint star is not given in the astrographic catalogue of Oxford, altho one of the three plates of this region shows stars as faint as $13^m.5$. Mr. Seares has determined the photovisual magnitude to be 12.98 and the photographic, 14.53; using the parallax mentioned above this gives 11.9 as the absolute photovisual magnitude.

A. van Maanen.

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## Magnitudes and Colors of Three Faint Stars of Large Proper Motion

Measures of the brightness of faint stars having large proper motions are of importance because of the low luminosity almost invariably to be associated with such stars. Large proper motion generally means that the moving object is among the nearest neighbors of the solar system; if, in spite of this circumstance, the

star as seen from the Earth is faint, its intrinsic brightness must be low. Definite knowledge of stars of unusually low absolute magnitude is much desired for both practical and theoretical reasons.

Three objects recently reported by Mr. van Maanen belong in this class. (See these PUBLICATIONS, December, 1917, p. 258, and p. 191 of this issue.) Results of comparisons with the Polar Standards are as follows:

I. Region of Lal. 1299

$\alpha = 0^h43^m52^s$ $\delta = +4^\circ 55'$ (1900)

Three photographic and two photovisual plates.

| | PG. MAG. | PV. MAG. | COLOR-INDEX |
|---|---|---|---|
| | 12.92 | ——— | ——— |
| | 12.86 | 12.28 | +0.58 |
| | 12.94 | 12.39 | +0.55 |
| Means | 12.91 | 12.34 | +0.57 |

The color, class $f4$, agrees well with the spectrum, which according to Mr. Adams is approximately Fo. Since the distance of the star is still unknown, its absolute magnitude cannot now be given.

II. Companion to Lal. 5490

$\alpha = 2^h56^m31^s$ $\delta = +61^\circ 22'$

Two pairs of photographic and photovisual plates by Mr. Shapley in 1917, Nov. 12th.

| | PG. MAG. | PV. MAG. | COLOR-INDEX |
|---|---|---|---|
| | 14.00 | 12.75 | +1.25 |
| | 13.89 | 12.52 | +1.37 |
| Means | 13.94 | 12.63 | +1.31 |

The color-class is $k3$; the spectrum is unknown. The photovisual magnitude agrees closely with the value adopted by van Maanen on the basis of star counts; the absolute magnitude already given by him, 10.9, requires no change.

III. Companion to 55 *Cancri*

$\alpha = 8^h46^m44^s$ $\delta = +28^\circ 42'$ (1900)

From four pairs of photographic and photovisual plates on 1918, April 16th and 17th.

| | PG. MAG. | PV. MAG. | COLOR-INDEX |
|---|---|---|---|
| | 14.49 | 12.92 | +1.57 |
| | 14.43 | 13.00 | +1.43 |
| | 14.67 | 13.01 | +1.66 |
| | (14.86) | (13.27) | (+1.59) |
| Means | 14.53 | 12.98 | +1.55 |

In forming the means, the fourth pair of values has been rejected because of haze. The color-class is *k*9. The absolute magnitude, as indicated by van Maanen in the preceding note, is 11.9.

FREDERICK H. SEARES.

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## NOTE ON NOVA MONOCEROTIS

A photograph of the spectrum of Nova *Monocerotis* taken on March 23rd shows that the nebular bands have increased in intensity relative to the hydrogen bands since the latter part of February. The lack of symmetry in the nebular bands is still very marked, the violet portion being much the stronger. The band at λ 4640, like the hydrogen bands, is relatively fainter on the more recent photograph.

W. S. ADAMS,
A. H. JOY.

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## NOTE ON THE IDENTIFICATION OF CERTAIN BRIGHT LINES IN THE SPECTRUM OF *o* CETI

A spectrogram of *o Ceti* obtained on March 2nd showed the presence of a number of bright lines not photographed by us previously. Most of these lines have been observed by Stebbins and seem to appear, or at least to become more intense, as the star approaches its minimum of light. Measurements of the negative add a few lines to the list catalogued by Stebbins in his well-known memoir, but the principal interest attaches to the identification of these lines and the evidence afforded by them as to physical conditions in the star. The following bright lines have been measured and their presence seems to be fairly certain. The wavelengths are corrected for the Earth's motion.

| *o Ceti* | SUN | ELEMENT | Δ | GROUP |
|---|---|---|---|---|
| 4102.44 | 4101.90 | H | +0.54 | |
| 4202.76 | 4202.20 | Fe | 0.56 | *b* |
| 4216.84 | 4216.35 | Fe | 0.49 | *b* |
| 4233.92 | 4233.33 | Fe, Mn | 0.59 | |
| 4292.18 | 4291.63 | Fe | 0.55 | *a* |